Options for Reducing the Threat of Bioterrorism

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Acknowledgement

This presentation is based on the independent research of:

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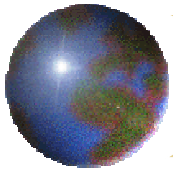


Causes of Concern: The 21st Century BW Threat

- Low cost
- Dual-use technology
- Information revolution
- Weak states
- Unstable regions
- Attraction for Non-State Actors

Major Challenges

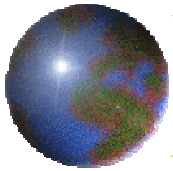
- Controlling expertise
- Controlling access to pathogens – especially for non-state actors
- Determining priorities for defending against potential threats

Current Threat Assessment Models

- Are focused on state-based programs

HOWEVER

- BW threats associated with non-state actors may be more difficult to assess and could warrant the development of new threat assessment models



Questions

- Are current strategies for combating the biological weapons threat sufficient for combating emerging threats from non-state actors?

- If not, how can current strategies for combating bioterrorism be expanded to reduce the threat?

Assessing Threat

Capabilities X Vulnerabilities X Intent =

THREAT

- Capabilities: Global, including low-tech, resource constrained environments with little government oversight; access to multiple vectors
- Vulnerabilities: Need for reliable detection systems, international coordination/response mechanisms;
- Intent: Unknown, but could include motivations intended to inflict mass destruction

Assessing Threat

- Capabilities can be reduced:
  - Access to pathogens - physical security
  - Access to expertise - redirection
  - Access to technologies - oversight

  However, capabilities are difficult to eliminate

- Intent is very difficult to accurately assess

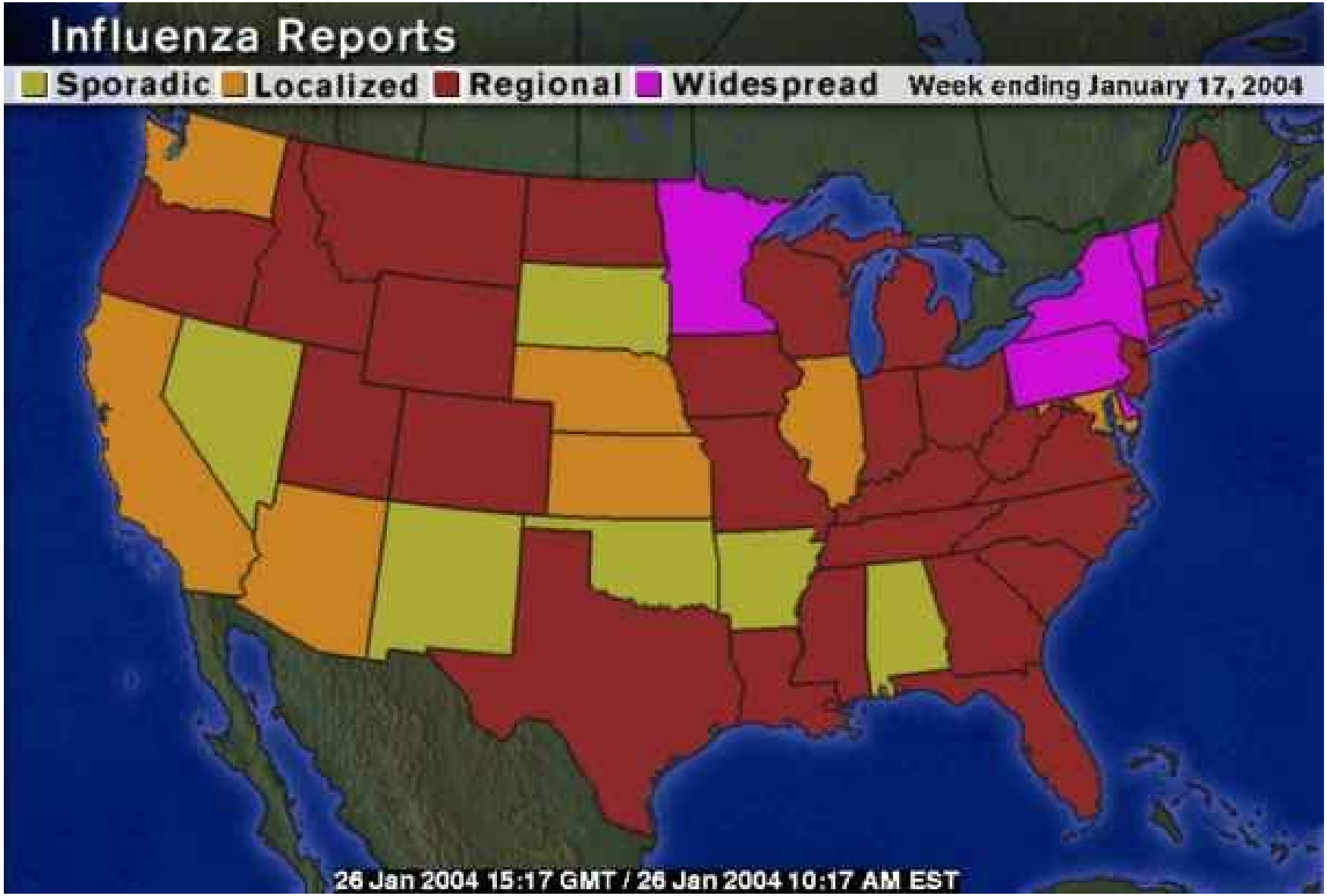
- <u>Limiting vulnerabilities is key for a meaningful threat reduction strategy</u>

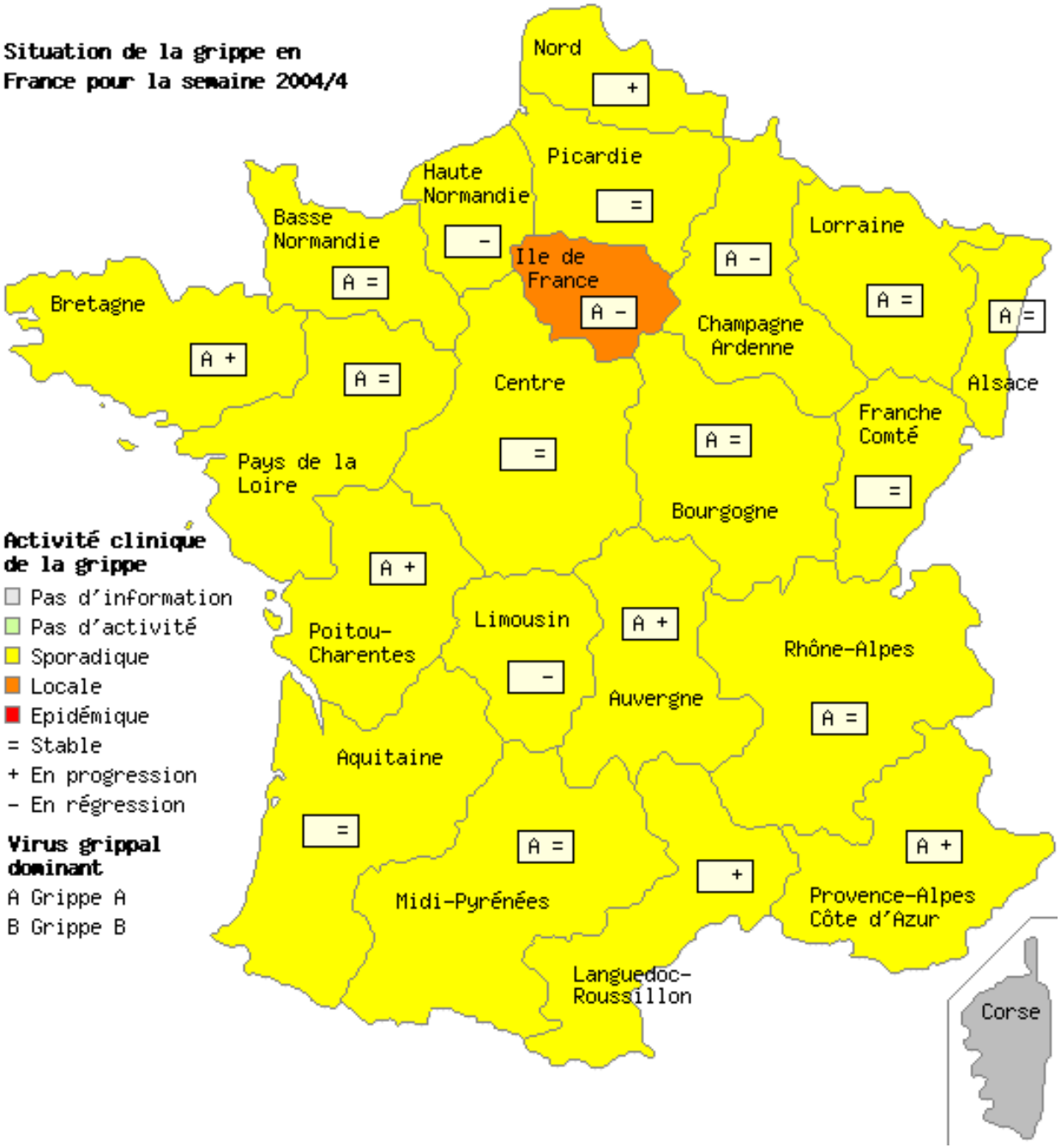
Capabilities

- Threat scenarios: to define threat
- Country case studies: to assess threat
- Laboratory Modeling: to validate threat

Threat Scenario - Influenza

- Influenza A presents with similar symptoms as many potential BW agents (fatigue, fever, cough, muscle ache, etc.)
- Genetic manipulation of Influenza A is routine and manipulation is tolerated
- Information about projected and current Influenza outbreaks is widely available


Influenza Reports
Sporadic
Localized
Regional
Widespread
Week ending January 17, 2004
28 Jan 2004 15:17 GMT / 28 Jan 2004 10:17 AM EST


Situation de la grippe en France pour la semaine 2004/4
Nord
+
Picardie
=
Haute Normandie
-
Basse Normandie
A =
Ile de France
A -
Lorraine
A =
Champagne Ardenne
Alsace
A =
Bretagne
A +
Centre
=
Franche Comté
=
Pays de la Loire
A =
Bourgogne
Activité clinique de la grippe
Pas d'information
Pas d'activité
Sporadique
Locale
Epidémique
= Stable
+ En progression
- En régression
A +
Poitou-Charentes
Limousin
-
A +
Auvergne
Rhône-Alpes
A =
Virus grippal dominant
A Grippe A
B Grippe B
Aquitaine
=
A =
Midi-Pyrénées
+
A +
Provence-Alpes Côte d'Azur
Languedoc-Roussillon
Corse

Conclusions:
Threat Scenarios - Influenza

- The regularity of the annual influenza cycle and the high degree of variability within that predictable cycle makes influenza A a potential smoke screen for a BW event.

- The development of a pandemic causing influenza A subtype – particularly after the WHO had already determined the annual vaccine – could be devastating.

Case Study – Country A

- Resource rich in naturally occurring pathogens (*B. anthracis, Y. pestis; Brucellosis;* others*)*
- Internal conflict and unstable regions
- Transnational migration
- Rural laboratories purify pathogens for legitimate clinical veterinary purposes
- Training in biotechnology for public health purposes
- Access to the internet

Conclusions: Case Study – Country A

The biological weapons threat, particularly from non-state entities, may be broader than has been projected in the past:

- Endemic pathogens are easily accessible
- Technologies and clinical laboratories needed to purify, amplify, and mass-produce small-scale biological weapons exist in Country A
- Biotechnologies are needed to improve local public health in poor, unstable countries, and lack of oversight makes dual-use a threat of unknown proportion

Desired Ends

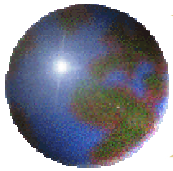
- Neutralizing biological weapons as an attack option by effectively reducing or eliminating their effectiveness and attractiveness

- Marginalize use of this class of weapons by:
  - Decreasing availability
  - Developing detection, diagnostic and therapeutic means to minimize human or economic impact

For best results: Synchronize with strategy to neutralize global emerging infectious diseases

Question:

What are the options (ways) for achieving the desired ends?



National Measures

MEANS

Multilateral Measures

MEANS

Options/Ways

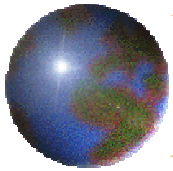
- **Information, Analysis, and Education**
- **Research & Development**
- **Strengthen International Cooperation**
- **Targeted Anti-Proliferant Strategies**

MEANS

International Organizations (WHO, others)

MEANS

Pre-Emptive Action (if all else fails)



Information Exchange, Analysis, & Education

Mechanisms for timely, streamlined information sharing and coordination within the U.S. - and with international partners - is critical:

- Encourage coordination between disparate health care communities
- Increase academic recognition for clinician contribution to national security
- Improve feedback loop between responders and policymakers
- Encourage cross-cultural efforts to exchange information between first responders, clinicians, law enforcement, etc.
- Educate general population about disease, background pathogen level

Strengthen international cooperation

International cooperation and coordination is critical to combating the threat of bioterrorism and increasing global public health

- Ensure timeliness and objectivity in disease surveillance; Consider independent national agencies for interface with the World Health Organization
- Broaden weapons scientist redirection and pathogen security programs to a broader group of interested communities and apply models outside of Russia/Eurasia
- Facilitate strain exchange under international controls to allow for accelerated, cooperative R & D
- International assistance should be available to implement biosafety and biosecurity programs, particularly in areas of concern

Strengthen international cooperation - II

- Promote international joint R & D, including scientist exchange, to develop integrated solutions for common problems/threats
- Provide assistance to help countries develop and implement effective export control strategies

Strengthen international cooperation - III

Use the SARS outbreak as a benchmark bioterrorism exercise:

- The international community should reward cooperation for countries involved in outbreaks or bioterrorist attacks with assistance in recovering
- The international community should consider imposing penalties on countries that behave irresponsibly in the event of outbreaks or attacks
- WHO should have full capacity to gain access to affected areas – its mandate should be enforced
- A global disease surveillance and reporting system is critical

Facilitate Research & Development

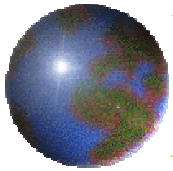
R & D funding mechanisms must be able to respond to changing criteria and evolving threats:

- Further streamline funding and review for R & D proposals related to combating bioterrorism
- Increase public-private partnership efforts to develop and rapidly incorporate criteria for specific areas of priority R & D, including decontamination technologies, diagnostics, vaccines, etc.
- Give high priority and sufficient funding to joint R & D on defenses against bioterrorism
- Begin thinking about how to facilitate information exchange on R & D priorities with international partners
- Promote establishment of ethical standards, courses, or codes of conduct

Targeted Anti-Proliferation Strategies

Most effective against larger groups and states

- Impeding access, coupled with demonstrated will to neutralize BW targets, should dissuade or deter some attempts to use BW
- Countries should be politically and financially responsible for actions launched or supported from their territory
- If national, international, and multilateral efforts fail, pre-emptive military action is an option



Conclusions

- The baseline for threat assessments may need to be broadened.
- The potential for developing biological weapons may be more prevalent than previously assumed.
- Review existing policies to determine real threat reduction impact
- Continued resources for biosecurity and bio-redirection are important.

Additional international resources devoted to defeating biological weapons and increasing global disease surveillance are crucial.